CALS TEST NETWORK

AFCTN Test Report 94-003

AFCTB-ID 93-006

Technical CGM Transfer

Using:

Texas Instruments' Data

MIL-D-28003 (CGM)

Quick Short Test Report

08 February 1993

Prepared for

Electronic Systems Center

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Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. he AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Texas Instruments' interpretation and use of the CALS standards in transferring Computer Graphics Metafile (CGM) data. Texas Instruments used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 3.5" disk. The stated goal of the test was to evaluate the CGM files and not the CALS headers.

2. Test Parameters

Test Plan: AFCTB 93-006

Date of Evaluation: 3 January 1993

Evaluator:
George Elwood
Air Force CALS Test Bed
DET 2 HQ ESC/ENCP
4027 Colonel Glenn Hwy
Suite 300
Dayton, OH 45431-1672

Data Originator:
Michael Hurn
Texas Instruments
6500 Chase Oaks Blvd.
P.O. Box 869305
Plano, TX 75086

Data Description:
CGM Transfer Test
2 CGM files

Data Source System:

CGM

HARDWARE
Unknown

SOFTWARE
Micrografx *Charisma v2.1*

Evaluation Tools Used:

MIL-D-28003 (CGM)

SUN SparcStation 2

ArborText *cgm2draw*

Island Graphics *IslandDraw v3.0*

AFCTN *validcgm*

Cheetah Gold 486

Software Publishing Corporation (SPC) *Harvard Graphics v3.05*

Inset Systems *HiJaak v2.1*

Inset Systems *HiJaak v1.0 Windows*

Micrografx *Charisma v2.1*

Corel *Ventura Publisher*

Standards Tested:

MIL-D-28003

3. 1840A Analysis

3.1 External Packaging

The 3.5" disk arrived at the Air Force CALS Test Bed (AFCTB) enclosed in an overnight express envelope. The exterior of the envelope was not marked with the magnetic media warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The 3.5" disk was not enclosed in a barrier bag or barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. Enclosed in the box was a packing list showing all files recorded on the 3.5" disk.

3.2 Transmission Envelope

The 3.5" disk received by the Air Force CALS Test Bed did not contain MIL-STD-1840A files. The files were not named per the standard conventions. The purpose of this test was to evaluate only the files.

3.2.1 Tape Formats

Data was delivered on a 3.5" disk.

3.2.2 Declaration and Header Fields

No Document Declaration file or data file headers were included on the 3.5" disk.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on the 3.5" disk.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on the 3.5" disk.

6. Raster Analysis

No Raster files were included on the 3.5" disk.

7. CGM Analysis

The 3.5" disk contained two CGM files. Both files were evaluated using a software available within the AFCTB with CALS options. This utility reported that both files had CALS errors. The reported error is an invalid transparency indicator. This error was reported in both files.

```
Error 6515: Element Class/ID: 3/4   Offset: 4394 octets Element No. 356
The Transparency Indicator is invalid; it must be 1 (on).
```

The files were also evaluated using the AFCTN *validcgm* utility. This program reported the same errors.

The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are a good indicator of usability. The use of these products is not an endorsement.

The files were converted using ArborText's *cgm2draw* utility. No errors were reported during the conversion process. The resulting files were read into Island Graphics' *IslandDraw*. When the images were displayed on the screen, the text at the top was very large and flowed off screen to the right. On file TI01, the circles from bombs on the front view were displayed on the bottom view of the aircraft. On file TI02, many entities were misplaced around the drawing. The same text problem was also noted. When both files printed, sev-

eral additional pages were generated with the text flowing across the top of the paper. Hard copies are included in the Appendix to this report.

The files were imported into the Micrografx *Charisma* without a reported error. The images from both files displayed and printed correctly.

The files were imported into SPC's *Harvard Graphics* without a reported error. The images displayed and printed correctly.

The files were imported into Inset System's *HiJaak for Windows* without a reported error. Some minor deviations were noted in both files. These were filled in areas like the bombs in the front view of TI01 and the right engine intake on file TI02.

The files were directly imported into Island Graphics' *IslandDraw* without a reported error. The displayed and printed images appear to be duplicates of the provided files.

The files were imported directly into Corel's *Ventura Publisher* without a reported error. When the files were displayed and printed, the images appeared very small and located in the lower center of the frame. Text in TI01 over flowed the frame area and was over written.

The CGM files sent by Texas Instruments do not meet the CALS MIL-D-28003 specification.

8. Conclusions and Recommendations

In summary, the 3.5" disk from Texas Instruments did not meet the MIL-STD-1840A requirement. However, the stated purpose of the test was to evaluate the data files.

Both CGM files were reported as not meeting MIL-D-28003 specification by both the software available in the AFCTB and the AFCTN *validcgm* utility. Both programs reported the same errors.

9. Appendix A - Detailed CGM Analysis

9.1 File TI01

9.1.1 Parser Log

```
CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 02/03/93     Time:  08:45:44

Metafile Examined    : i:\9306\ti01

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

======================== Trace Report ========================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

Error 6515: Element Class/ID: 3/4   Offset: 4394 octets Element No. 356
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 8846 octets Element No. 698
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 9502 octets Element No. 747
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 10158 octets Element No. 815
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 14270 octets Element No. 1021
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 19614 octets Element No. 1304
The Transparency Indicator is invalid; it must be 1 (on).
```

```
Error 6515: Element Class/ID: 3/4   Offset: 22388 octets Element No. 1472
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 22646 octets Element No. 1485
The Transparency Indicator is invalid; it must be 1 (on).

================ Conformance Summary Report =================

CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 02/03/93     Time:  08:45:49

Name of CGM under test: i:\9306\ti01.cgm
Encoding              : Binary

Pictures Examined     : All
Elements Examined     : All
Bytes    Examined     : All

BEGIN METAFILE string : "Micrografx CGM Translator, version 3.9 (T.I.
                         Beta)"
METAFILE DESCRIPTION  : "MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 128; string contains: "1"

Conformance Summary   :  This file conforms to the CGM specification.

                         However, this file does not satisfy
                         the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

          1 Pictures Tested
       1509 Elements Tested
      23092 Octets Tested

        0 Illegal CGM Elements                        1000 -   1999
        0 Incorrect CGM Element Lengths               2000 -   2999
        0 CGM State Errors                            3000 -   3499
        0 Required CGM Elements Missing or Wrong      4000 -   4499
        0 CGM Parameter Values Out of Range           6000 -   6499
        0 CGM Structure Errors                        7000 -   7499
        0     ***     CGM Errors Found (total)      ***

        0 Profile State Errors                        3500 -   3999
        0 Illegal Profile Elements                    4500 -   4999
        8 Profile Parameter Values Out of Range       6500 -   6999
```

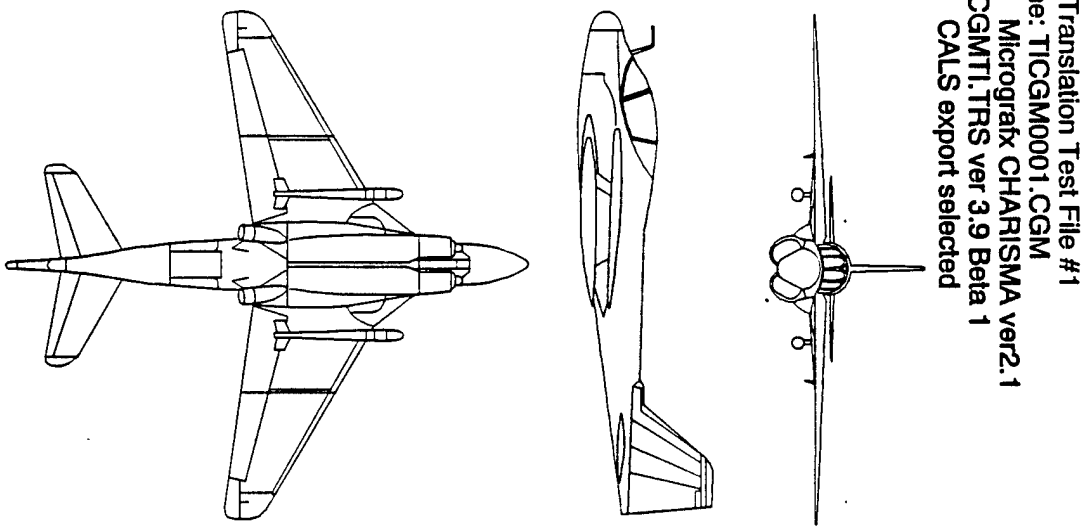
```
        0 Profile Data Limits Exceeded                8500 -   8999
        0 Other Profile Constraints Violated          9500 -   9999
        8     *** Profile Violations Found (total) ***

        0 Warnings (Advisory Remarks)                20000 -  20999

        1 distinct errors and warnings were reported.

================ End of Conformance Report ==================
```

9.1.2 validcgm Log

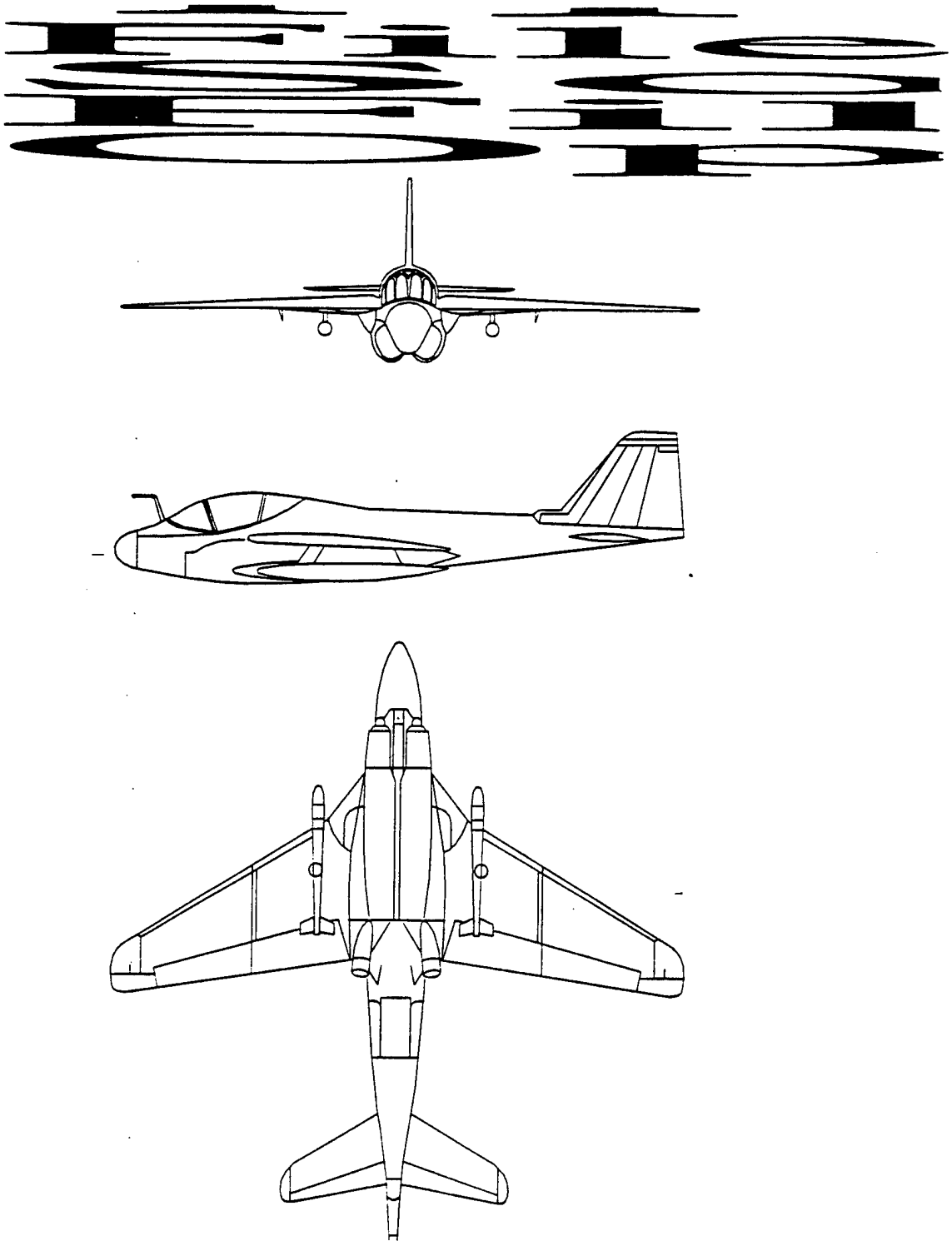
```
Analysis for file ti01.cgm using table table
MILSPEC 28003 error: transparency not on
(356, 4394)       (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(698, 8846)       (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(747, 9502)       (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(815, 10158)      (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(1021, 14270)     (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(1304, 19614)     (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(1472, 22388)     (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(1485, 22646)     (3, 4, 2)       Transparency OFF
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(2, 1) occurred 1 time
(2, 2) occurred 1 time
```

(2, 3) occurred 1 time
(2, 5) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 1) occurred 1 time
(3, 3) occurred 201 times
(3, 4) occurred 13 times
(4, 1) occurred 288 times
(4, 4) occurred 5 times
(4, 17) occurred 3 times
(4, 18) occurred 4 times
(5, 2) occurred 5 times
(5, 3) occurred 397 times
(5, 4) occurred 1 time
(5, 14) occurred 1 time
(5, 15) occurred 1 time
(5, 16) occurred 5 times
(5, 18) occurred 1 time
(5, 22) occurred 2 times
(5, 23) occurred 148 times
(5, 27) occurred 1 time
(5, 28) occurred 397 times
(5, 29) occurred 1 time
(5, 30) occurred 14 times

9.1.3 Output Charisma

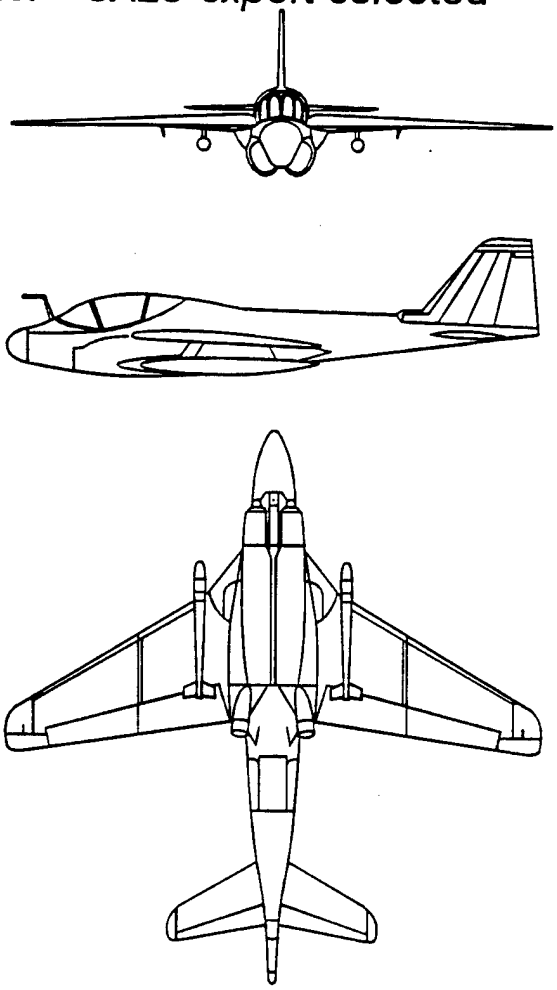


9.1.4 Output cgm2draw/IslandDraw



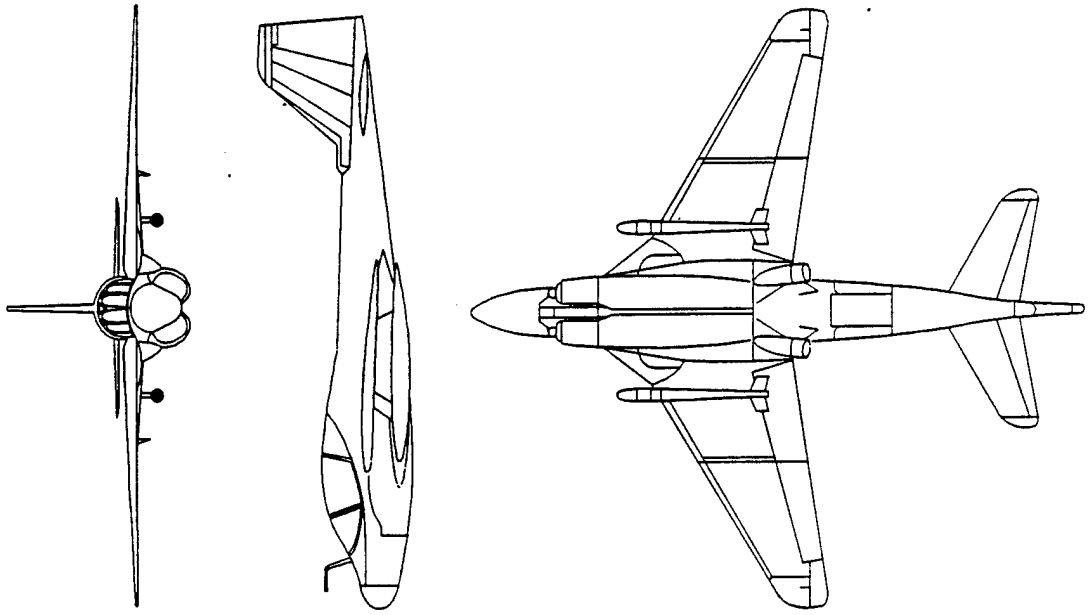
9.1.5 Output Harvard Graphics

TI CGM Translation Test File #1
File Name: TICGM0001.CGM
Source: Micrografx CHARISMA ver2.1
Filter: CGMTI.TRS ver 3.9 Beta 1
Options: CALS export selected



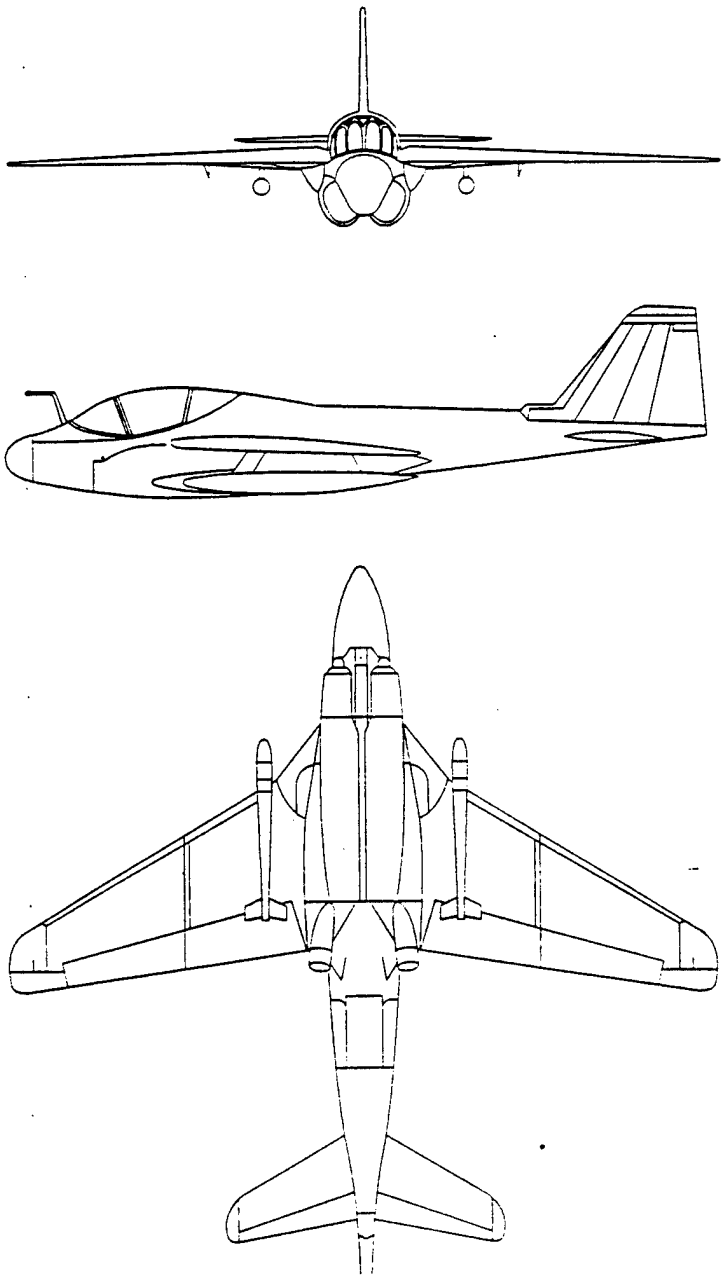
9.1.6 HiJaak for Windows

TI CGM Translation Test File #1
File Name: TICGM0001.CGM
Source: Micrografx CHARISMA ver2.1
Filter: CGMTI.TRS ver 3.9 Beta 1
Options: CALS export selected



9.1.7 Output IslandDraw

ıe Name: nCGMI0001.CGM
ɔurce: Micrografx CHARISMA ver2.1
lter: CGMTI.TRS ver 3.9 Beta 1
)ptions: CALS export selected



9.2 File TI02

9.2.1 Parser Log

```
CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
Execution Date: 02/03/93     Time:  08:45:55

Metafile Examined    : i:\9306\ti02

Pictures Examined    : All
Elements Examined    : All
Bytes    Examined    : All

======================== Trace Report ========================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

Error 6515: Element Class/ID: 3/4   Offset: 2560 octets Element No. 220
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 5942 octets Element No. 500
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 7190 octets Element No. 617
The Transparency Indicator is invalid; it must be 1 (on).

                          <<<<< PART OF LOG REMOVED HERE >>>>>

Error 6515: Element Class/ID: 3/4   Offset: 28304 octets Element No. 1987
The Transparency Indicator is invalid; it must be 1 (on).

Error 6515: Element Class/ID: 3/4   Offset: 29168 octets Element No. 2001
The Transparency Indicator is invalid; it must be 1 (on).

================ Conformance Summary Report =================

CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-91 CGM Technology Software
```

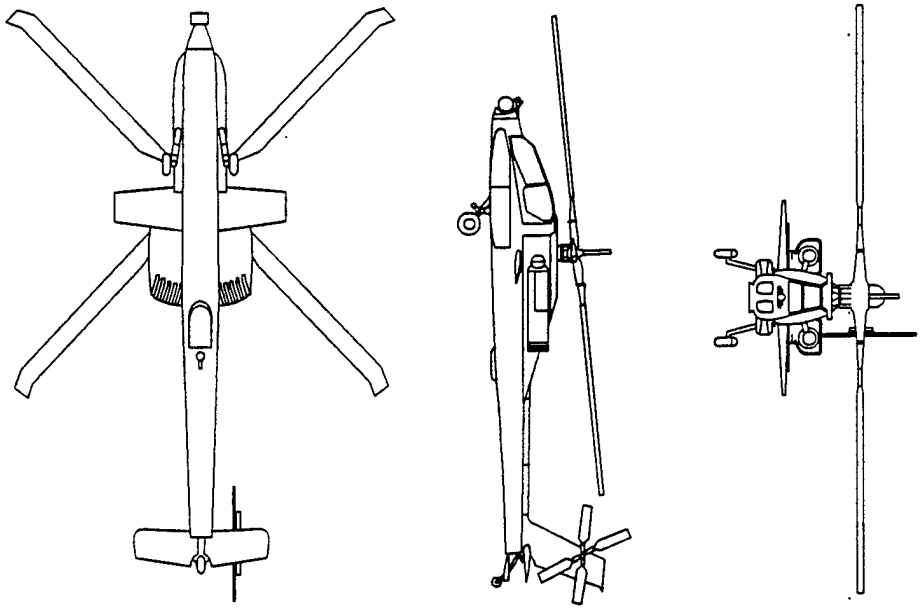
```
Execution Date: 02/03/93     Time:  08:46:02

Name of CGM under test: i:\9306\ti02.cgm
Encoding              : Binary

Pictures Examined     : All
Elements Examined     : All
Bytes    Examined     : All

BEGIN METAFILE string : "Micrografx CGM Translator, version 3.9 (T.I.
                         Beta)"
METAFILE DESCRIPTION  : "MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 128; string contains: "1"

Conformance Summary   :  This file conforms to the CGM specification.

                         However, this file does not satisfy
                         the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

          1 Pictures Tested
       2016 Elements Tested
      29468 Octets Tested

        0 Illegal CGM Elements                          1000 -   1999
        0 Incorrect CGM Element Lengths                 2000 -   2999
        0 CGM State Errors                              3000 -   3499
        0 Required CGM Elements Missing or Wrong        4000 -   4499
        0 CGM Parameter Values Out of Range             6000 -   6499
        0 CGM Structure Errors                          7000 -   7499
        0     ***     CGM Errors Found (total)      ***

        0 Profile State Errors                          3500 -   3999
        0 Illegal Profile Elements                      4500 -   4999
       36 Profile Parameter Values Out of Range         6500 -   6999
        0 Profile Data Limits Exceeded                  8500 -   8999
        0 Other Profile Constraints Violated            9500 -   9999
       36     *** Profile Violations Found (total) ***

        0 Warnings (Advisory Remarks)                  20000 -  20999

        1 distinct errors and warnings were reported.

================ End of Conformance Report ==================
```

9.2.2 validcgm Log

```
Analysis for file ti02.cgm using table table
MILSPEC 28003 error: transparency not on
(220, 2560)       (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(500, 5942)       (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(617, 7190)       (3, 4, 2)       Transparency OFF

                              <<<<< PART OF LOG REMOVED HERE >>>>>

MILSPEC 28003 error: transparency not on
(1987, 28304)     (3, 4, 2)       Transparency OFF
MILSPEC 28003 error: transparency not on
(2001, 29168)     (3, 4, 2)       Transparency OFF
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 4) occurred 1 time
(1, 5) occurred 1 time
(1, 6) occurred 1 time
(1, 7) occurred 1 time
(1, 10) occurred 1 time
(1, 11) occurred 1 time
(2, 1) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 5) occurred 1 time
(2, 6) occurred 1 time
(2, 7) occurred 1 time
(3, 1) occurred 1 time
(3, 3) occurred 286 times
(3, 4) occurred 45 times
(4, 1) occurred 360 times
(4, 4) occurred 5 times
(4, 7) occurred 19 times
(4, 11) occurred 9 times
(4, 17) occurred 9 times
(4, 18) occurred 2 times
(5, 2) occurred 9 times
```

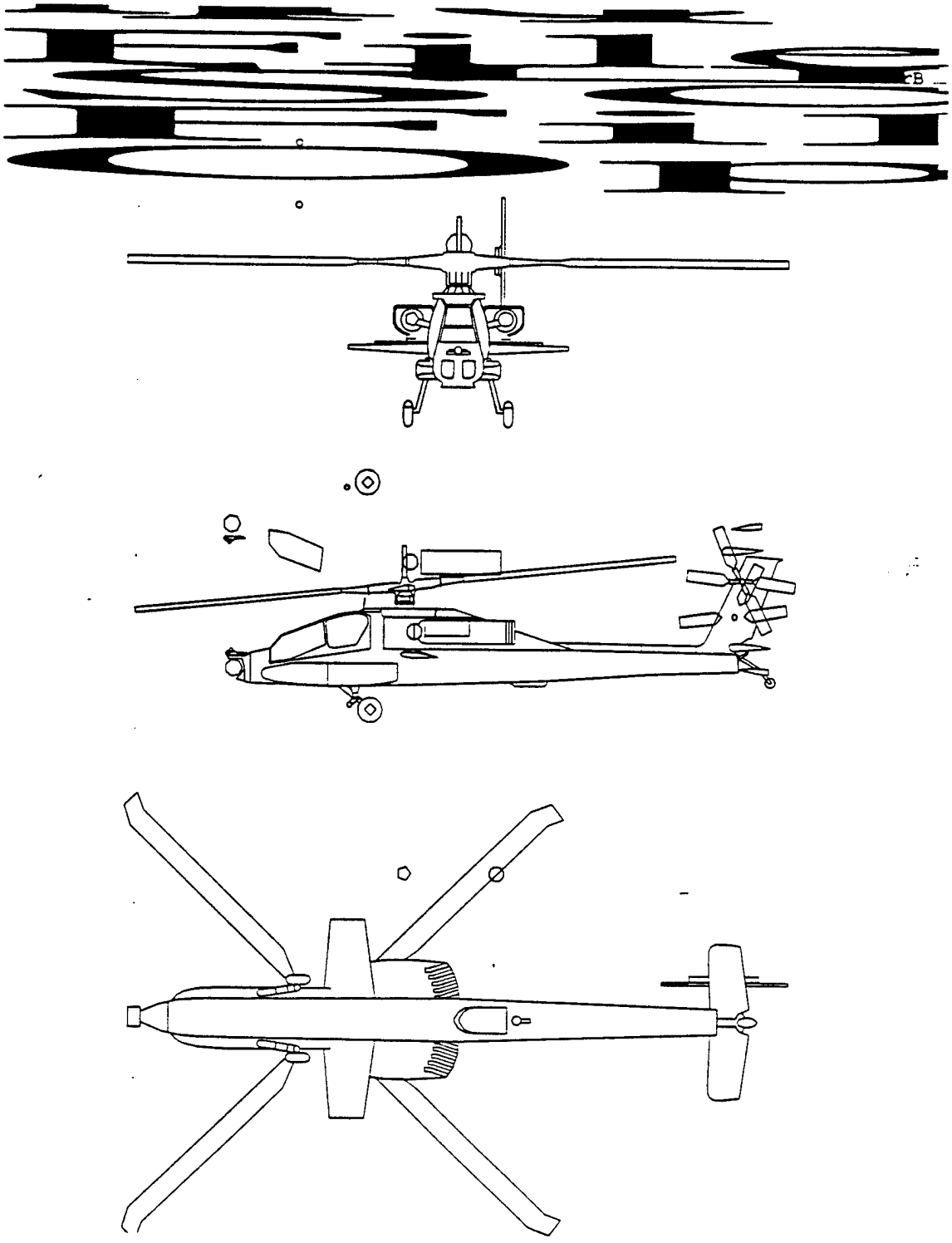
(5, 3) occurred 512 times
(5, 4) occurred 1 time
(5, 14) occurred 1 time
(5, 15) occurred 1 time
(5, 16) occurred 5 times
(5, 18) occurred 1 time
(5, 22) occurred 18 times
(5, 23) occurred 160 times
(5, 27) occurred 1 time
(5, 28) occurred 512 times
(5, 29) occurred 1 time
(5, 30) occurred 38 times

9.2.3 Output Charisma



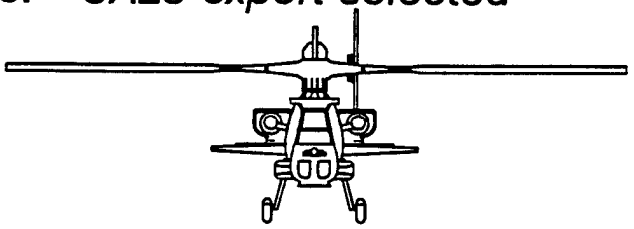
TI CGM Translation Test File #2
File Name: TICGM0002.CGM
Source: Micrografx CHARISMA ver2.1
Filter: CGMTI.TRS ver 3.9 Beta 1
Options: CALS export selected

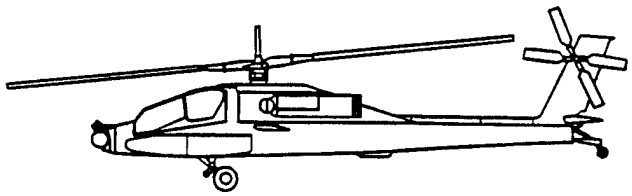
9.2.4 Output cgm2draw/IslandDraw

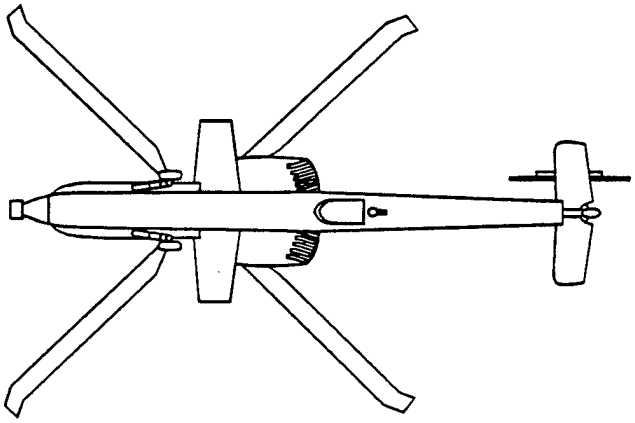


9.2.5 Output Harvard Graphics

TI CGM Translation Test File #2
File Name: TICGM0002.CGM
Source: Micrografx CHARISMA ver2.1
Filter: CGMTI.TRS ver 3.9 Beta 1
Options: CALS export selected

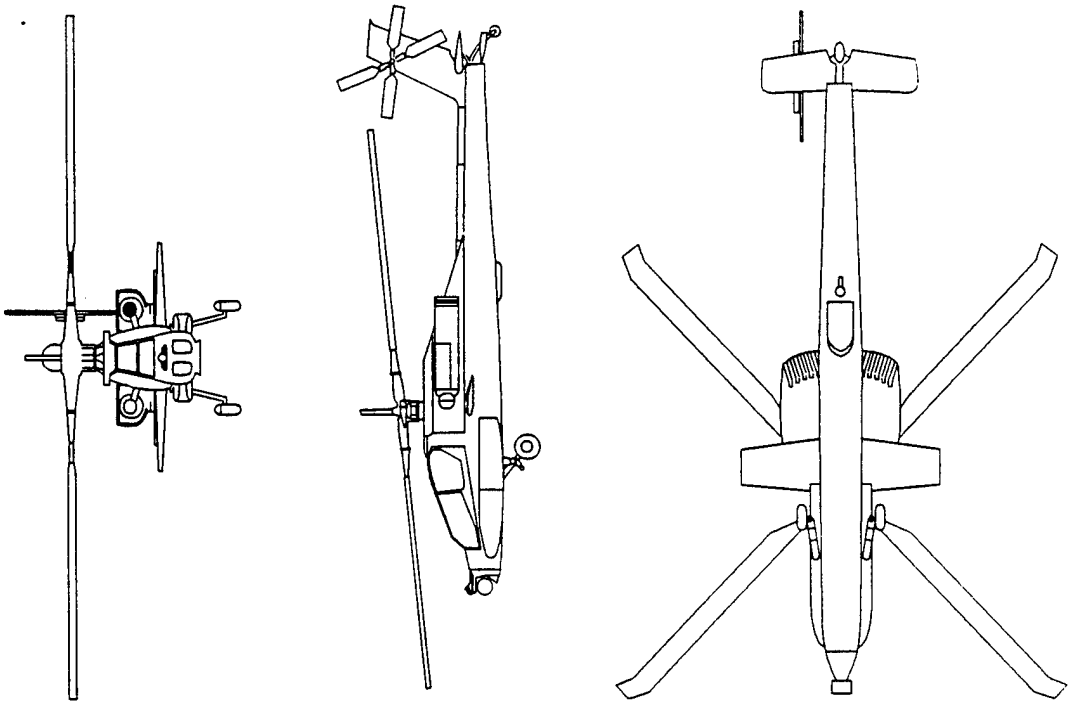






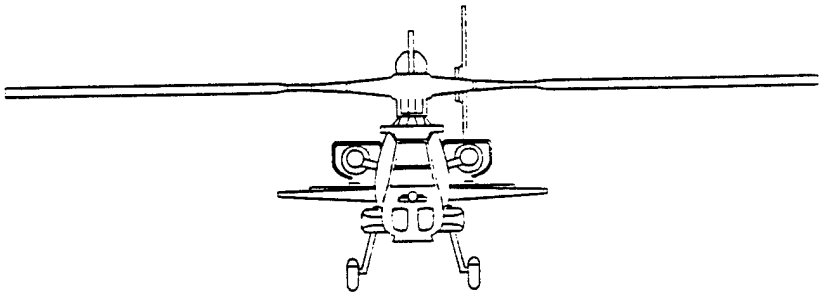
9.2.6 HiJaak for Windows

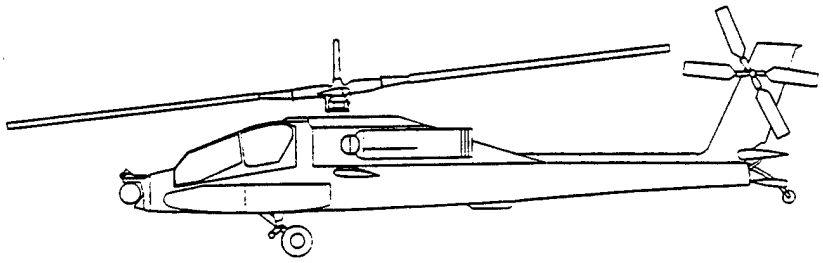
TI CGM Translation Test File #2
File Name: TICGM0002.CGM
Source: Micrografx CHARISMA ver2.1
Filter: CGMTI.TRS ver 3.9 Beta 1
Options: CALS export selected

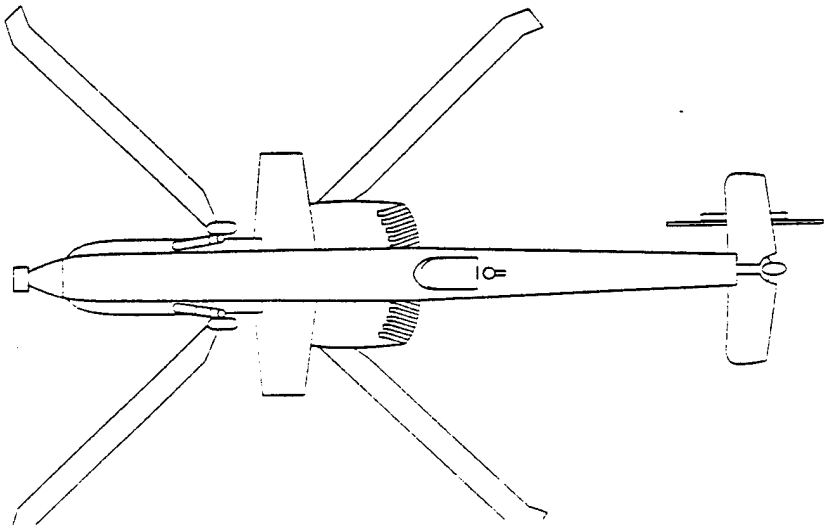


9.2.7 Output IslandDraw

ıe Name: TICGMI0002.CGM
ɔurce: Micrografx CHARISMA ver2.1
lter: CGMTI.TRS ver 3.9 Beta 1
ıptions: CALS export selected







9.3 Output Ventura Publisher - TI01 & TI02